

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
11 March 2004 (11.03.2004)

PCT

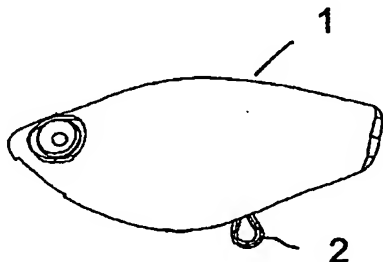
(10) International Publication Number
WO 2004/019677 A1

- (51) International Patent Classification⁷: **A01K 85/18**
- (21) International Application Number:
PCT/FI2003/000614
- (22) International Filing Date: 20 August 2003 (20.08.2003)
- (25) Filing Language: Finnish
- (26) Publication Language: English
- (30) Priority Data:
20021537 28 August 2002 (28.08.2002) FI
20022121 2 December 2002 (02.12.2002) FI
- (71) Applicant: **RAPALA VMC CORPORATION [FI/FI];**
Tehtaantie 2, FIN-17200 VÄÄKSY (FI).
- (72) Inventors: **LEPPÄLÄ, Harri;** Uotilankatu 46 A 5, FIN-15840 LAHTI (FI). **SIIRTOLA, Juha;** Päivämäentie, FIN-19110 VIERUMÄKI (FI).
- (74) Agent: **OY JALO ANT-WUORINEN AB;** Iso Roobertinkatu 4-6 A, FIN-00120 HELSINKI (FI).
- (81) Designated States (*national*): AU, JP, NO, PL, RU.
- (84) Designated States (*regional*): European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR).
- Published:
— with international search report
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*



WO 2004/019677 A1

(54) Title: FISHING LURE



(57) Abstract: The present invention concerns a lure comprising a body (1), at least one hook fastener (2), line fastener (6) and, if needed, a swimming plate (4) attached to the body. The body is made as a ready bait body and it is enclosed within a coat (5) manufactured substantially of a transparent material in a die space where the bait body is in.

Fishing lure

The present invention concerns a fishing lure, to which special features can be gained by means of a construction thereof in accordance with the invention.

- 5 In lures of prior art, the construction generally consists of a body made as one piece or as mirror-image halves joined together, said body corresponding to the final size and shape of the lure. The material of the body is to a great extent optional, traditionally wood, and in newer constructions different plastics suitable for die-casting techniques. Elements needed for the lure like hook fastener, line fastener, swimming plate, are attached to the body.
- 10 Patterning and plating are usually made on the surface of the body piece by painting, multicolour printing and protected my means of varnishing. It is also known to use in lures constructions, in which components having influence on the appearance or operation of the lure have been inserted inside the body produced of transparent material. Especially these solutions are used when producing the body from mirror-image halves to be joined to-
- 15 together. With this production technique the components in question can be protected against external influences.

- Providing appropriate colouring and patterning inside the lure body is, however, from the point of view of the manufacturing technique, essentially more difficult than patterning and colouring of the surface of the lure body. The body halves to be made as mirror images, for
- 20 example, must be concave in order to achieve an appropriate bait effect by the colouring of the inner surface. Use of printing techniques for colouring this kind of a surface is difficult. Manufacturing technique and constructional strength of the halves demands generally bracings projecting from the surface, which for its part makes the colour treatment of the surface difficult. With a lure made by using this technique the area of the patterned/coloured
- 25 surface remains smaller than the outer surface of the lure body.

The colouring of the outer surface, for its part, involves problems concerning the durability of the surface. In the use of the lure the surface is influenced by many stresses, demanding great endurance of the colours and protective lacquers to be used on the surface. In practice only materials including problematic solvents can be considered.

An essential improvement of the problems referred to above has been achieved by means of a lure in accordance with the present invention, the characteristics of which become apparent from the enclosed claim 1.

5 With the present invention the lure body is substantially manufactured to its desired dimensions and shape. Required hook and line fasteners and optionally a swimming plate are attached to the body. With respect to the swimming plate it is also possible to arrange a suitable slot or other attaching facility for the swimming plate, which will not be attached to the body until the finishing phase of the lure. After that, the outer surface of the body will be patterned and coloured by means of some technique known in the art, like painting,
10 printing or by attaching a patterned and coloured film onto the surface. With this patterning and colouring the body will be finished to a ready lure body, in other words with respect to colouring, mainly like a ready lure is supposed to look like.

In the following manufacturing phase, in accordance with the invention, a coat is provided onto the body being prepared, said coat being made of an appropriate transparent or trans-
15 lucence material in a die space, where the body has been inserted. Manufacturing of the coat in this die space is mainly implemented by means of a casting technique, whereby the body acts as a core. A recommended casting method is the die-casting.

Especially suitable material for manufacturing the coat of the lure in accordance with the present invention is silicon rubber. Silicon rubber in this connection stands for a two-
20 component silicone elastomer vulcanizable in a mould. Those are known by name Liquid Silicone Rubber (LSR) and to be acquired on the market from known silicone producers like Bayer and Wacker. Silicone rubbers are well suitable to be used in die-casting techniques because of their chemical characteristics. They have suitable flow characteristics that guarantee especially easy filling of the mould and excellent gas extraction properties.
25 The material penetrates easily for example a channel with a diameter of 0,1 mm. Thus, details of the cast having a shape of a fish, like fins, barbells and other projections can be easily produced. Compared with a lure of prior art, also a prominently thinner coating layer can be used.

Further, there is no need to use even nearly as high pressure in the die-casting process as
30 when using other hot vulcanizable elastomers, where the pressure can be typically 200 – 300 bar. By using silicone rubbers the pressure can be decreased even to a half of that.

The silicone rubber is typically vulcanizable at a temperature between 150...200°C. Because there is no need to use a high pressure and a high temperature simultaneously, the materials of the core can be chosen more freely than with a technique of prior art. Also the short in-mould time speeds up the manufacturing process.

- 5 The chemical properties of the hardened silicone rubber are excellent in terms of environmental issues because of their inertia. Further, the lures in accordance with the present invention are compatible with other fishing tackle produced of silicone. Those can include softeners that are transferred from one object to another in an undesirable way.

10 The floating properties of silicone rubber are neutral, whereby also the swimming depth of the lure can be exactly adjusted.

Also other thermoplastic materials are usable for implementing the present invention. These are for instance ABS, PMMA, TPU and TPE. Also plastic materials that can be made fluent by means of plasticizers or alternatively plastic materials to be hardened by means of hardeners are usable, as well as the pouring cast technique using those. Especially softeners, however, include components harmful to the environment, whereby the
15 use of this technique is less advisable.

With respect to the coat material to be cast onto the body, also its compatibility with the materials used on the surface of the body must be taken into account, additionally. A significant property of the coat material for implementing a preferred embodiment of the present invention is the bonding of the coat onto the surface material of the body.
20

An example of a lure in accordance with the present invention is described in enclosed drawings, wherein:

Figure 1 is a side view of the body of a lure in accordance with the invention,

Figure 2 is a front view of the body of Figure 1,

25 Figure 3 is a side view of a swimming plate of a lure of the present invention,

Figure 4 is a perspective view of the element shown in Figure 3,

Figure 5 is a side view of a ready-fitted lure with its coat, and

Figure 6 shows one embodiment of the inner construction of the body.

In the described embodiment, the body 1 of the lure is made into a ready bait body with respect to its outward appearance, external form and its essential equipment. The surface of the body 1 is coloured and patterned according to the desired colouring and patterning of the final lure. Eye 2 has been fastened to the body for attachment of the hook. For the swimming plate 4 (Figures 3 and 4) a suitable slot 3 has been formed to the front part of the body (figure 2), to receive the projection 10 of the swimming plate. After that the body has been inserted in a die-casting mould, the die space of said die-casting mould being slightly bigger than the body. The body 1 forms thereby the core defining the die space so that required die space is left for the thickness of the desired coat between the core and the mould. The thickness of the coat 5 to be die-cast (Figure 5) is preferably from 0,5 to 2 mm. With respect to the elements leaving outside the body, like fastening eyes, it must be taken into account that they are adequately left outside the die space.

Also the fastening slot 3 of the swimming plate 4 must be left outside the die space adequately. On the other hand, however, also a mould can be used, that for the part of the fastening slot of the swimming plate 4 has been designed so that suitable fastening elements for attaching the swimming plate to the lure after the die-cast, will be formed of the coat material onto the body slot and/or surface when die-casting the coat. Also a die-casting mould can be used, in which the swimming plate is die-cast in connection with die-casting of the coat. In the described embodiment, the eye 6 for attaching the line is placed onto the swimming plate. This eye could also be attached to the body in the same way as the hook eye 2.

The coat 5 is made of a plastic material classified hard or soft, chosen according to each purpose. With respect to the coat manufacturing it must be taken into account that it can also be made multi-layer, whereby the materials for different layers can have different properties. With materials to be used for different layers, the compatibility of the coat with the body surface can be influenced, like bonding, external properties of the lure and the visual impression of the finished lure. One thing having influence on the visual impression is associated with the refracted index of the material used for the coat. If for instance two layers of hard, clear plastic material have been used for the coat, the refraction of the light at the interface of the layers causes an effect that picks out emphasized the surface pattern and colour of the body.

The visual impression given by the ready lure can be emphasized in a lure in accordance with the invention also by shaping the surface of the body, without having any influence on the swimming properties of the lure by this shaping. Optional embossments and recesses can be formed onto the surface to be levelled off by the coat to be formed onto the surface, and the swimming surface of the lure will be smooth, if desired. Correspondingly, the coat surface can be shaped independently of the body, in case for instance a surface that causes suitable swimming vibrations is desired.

According to the present invention, further, manufacturing of the lure also makes it possible to make the coat so that materials with different properties are used on different parts of the body, for instance different material on the front portion of the lure than on the back portion thereof. The die-cast die must in that case be equipped with two material inlet points arranged in different places and, correspondingly, with separate material handling and feeding devices for both of the inlet points.

The plastic materials in question can generally be classified to belong to the following groups: thermoplastics, cold-cast plastics, mouldable resins, soft glass-clear plastics and vulcanizable materials.

One way to create different colour and light effects in a lure in accordance with the invention is to use inner constructions in the body causing the refraction of light inside the body. This kind of a "lens-effect" can be caused for instance by means of a construction shown in Figure 6. Body 1 is partly hollow and comprises two halves 7, 8. Ribs 9 give suitable stiffness to the body and, additionally, refract the light so that the lure, when it is ready, gets a tempting appearance. The form and direction of the ribs can be different from those shown in the figure. Also the inner construction of the described body can have different materials, for instance having different refractive indexes, as well as different colouring.

Claims:

1. A fishing lure comprising a body (1), at least one hook fastener (2), line fastener (6) and, if needed, a swimming plate (4) attached to the body, **characterized in**, that the body is manufactured at least for the part of its colouring substantially as a ready bait body and that the bait body is enclosed within a coat (5) substantially manufactured of a transparent material in a die space where the bait body is in.
2. The lure according to claim 1, **characterized in**, that the coat (5) is made of a material bonding to the surface material of the body.
3. The lure according to claim 1 or 2, **characterized in**, that the coat (5) is die-cast in a die space where the bait body is in.
4. The lure according to claim 1, 2 or 3, **characterized in**, that the coat (5) is cast as multiple layers.
5. The lure according to claim 4, **characterized in**, that the materials of the different coat layers have different refractive indexes.
6. The lure according to claim 4 or 5, **characterized in**, that the materials of the different coat layers have different hardness.
7. The lure according to any of the foregoing claims, **characterized in**, that the surface of the bait body (1) is furnished with embossments.
8. The lure according to any of the foregoing claims, **characterized in**, that by manufacturing the coat layer (5) of the lure, the lure has been equipped with elements having influence on its swimming properties.
9. The lure according to any of the foregoing claims, **characterized in**, that by manufacturing the coat layer (5) of the lure, the lure has been equipped with elements having influence on its appearance.
10. The lure according to any of the foregoing claims, **characterized in**, that the body (1) comprises an inner construction where the light is refracted.

11. The lure according to claim 10, **characterized in**, that the inner construction is formed of ribs (9).
12. The lure according to any of the foregoing claims, **characterized in**, that the coat is cast of silicon rubber.

Abstract

The present invention concerns a lure comprising a body (1), at least one hook fastener (2), line fastener (6) and, if needed, a swimming plate (4) attached to the body. The body is made as a ready bait body and it is enclosed within a coat (5) manufactured substantially
5 of a transparent material in a die space where the bait body is in.

1/1

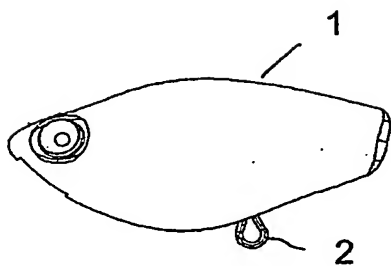


Fig. 1

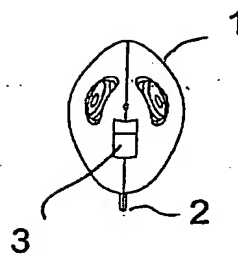


Fig. 2

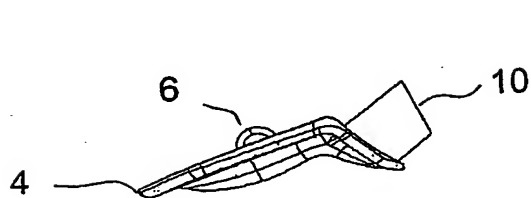


Fig. 3

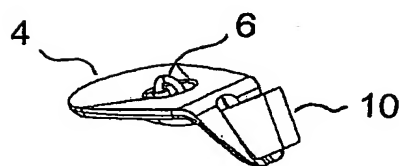


Fig. 4

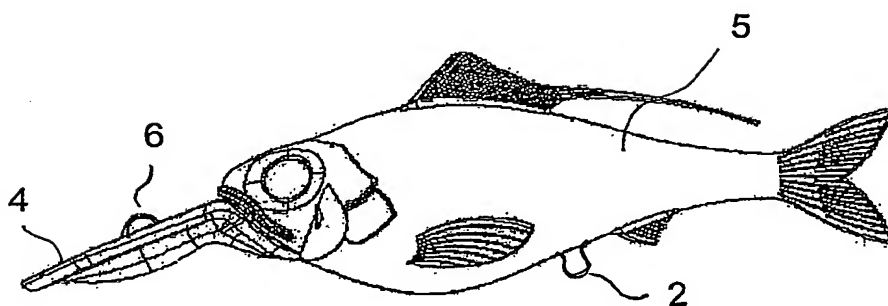


Fig. 5

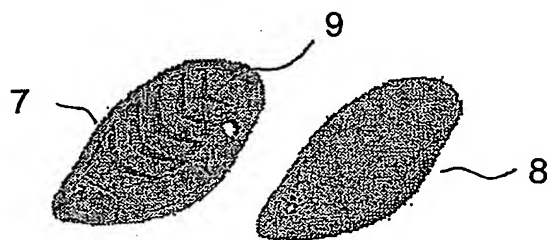


Fig. 6

INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI 03/00614

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: A01K 85/18

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: A01K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-INTERNAL, WPI DATA, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3540144 A (P.W. GURKA), 17 November 1970 (17.11.70), column 2, line 1 - column 3, line 22, abstract	1-2,7,9-10
Y	--	4-5
Y	US 6018902 A (C.S. GUDERMUTH ET AL), 1 February 2000 (01.02.00), abstract	4-5
X	US 5131182 A (J.I. ISING), 21 July 1992 (21.07.92), column 1, line 42 - line 61; column 2, line 47 - line 60; column 3, line 3 - line 9, abstract	1-2,9
	--	

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered

to be of particular relevance

"B" earlier application or patent but published on or after the international

filing date

"L" document which may throw doubts on priority claim(s) or which is

cited to establish the publication date of another citation or other

special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other

means

"P" document published prior to the international filing date but later than

the priority date claimed

"T" later document published after the international filing date or priority

date and not in conflict with the application but cited to understand

the principle or theory underlying the invention

"X" document of particular relevance: the claimed invention cannot be

considered novel or cannot be considered to involve an inventive

step when the document is taken alone

"Y" document of particular relevance: the claimed invention cannot be

considered to involve an inventive step when the document is

combined with one or more other such documents, such combination

being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

29 October 2003

Date of mailing of the international search report

06-11-2003

Name and mailing address of the ISA/

Swedish Patent Office

Box 5055, S-102 42 STOCKHOLM

Facsimile No. +46 8 666 02 86

Authorized officer

Mimmi Westman / MRO

Telephone No. +46 8 782 25 00

INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI 03/00614

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3528189 A (D.L. LILLEY, JR), 15 Sept 1970 (15.09.70), column 2, line 21 - column 3, line 13, abstract --	1
A	US 2933847 A (J.W. FRASURE), 26 April 1960 (26.04.60), whole document --	1-12
A	US 6058645 A (M.G. LUMMIS), 9 May 2000 (09.05.00), whole document -- -----	1-12

INTERNATIONAL SEARCH REPORT

Information on patent family members

06/09/03

International application No.

PCT/FI 03/00614

Patent document cited in search report			Publication date	Patent family member(s)	Publication date
US	3540144	A	17/11/70	NONE	
US	6018902	A	01/02/00	NONE	
US	5131182	A	21/07/92	NONE	
US	3528189	A	15/09/70	NONE	
US	2933847	A	26/04/60	NONE	
US	6058645	A	09/05/00	NONE	

INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI 03/00614

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: A01K 85/18

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: A01K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-INTERNAL, WPI DATA, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3540144 A (P.W. GURKA), 17 November 1970 (17.11.70), column 2, line 1 - column 3, line 22, abstract	1-2,7,9-10
Y	--	4-5
Y	US 6018902 A (C.S. GUDERMUTH ET AL), 1 February 2000 (01.02.00), abstract	4-5
X	US 5131182 A (J.I. ISING), 21 July 1992 (21.07.92), column 1, line 42 - line 61; column 2, line 47 - line 60; column 3, line 3 - line 9, abstract	1-2,9
	--	

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"B" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

29 October 2003

Date of mailing of the international search report

06-11-2003

Name and mailing address of the ISA/

Swedish Patent Office

Box 5055, S-102 42 STOCKHOLM

Facsimile No. +46 8 666 02 86

Authorized officer

Mimmi Westman / MRo

Telephone No. +46 8 782 25 00

INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI 03/00614

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3528189 A (D.L. LILLEY, JR), 15 Sept 1970 (15.09.70), column 2, line 21 - column 3, line 13, abstract --	1
A	US 2933847 A (J.W. FRASURE), 26 April 1960 (26.04.60), whole document --	1-12
A	US 6058645 A (M.G. LUMMIS), 9 May 2000 (09.05.00), whole document. -----	1-12

INTERNATIONAL SEARCH REPORT
Information on patent family members

06/09/03

International application No.
PCT/FI 03/00614

Patent document cited in search report			Publication date	Patent family member(s)	Publication date
US	3540144	A	17/11/70	NONE	
US	6018902	A	01/02/00	NONE	
US	5131182	A	21/07/92	NONE	
US	3528189	A	15/09/70	NONE	
US	2933847	A	26/04/60	NONE	
US	6058645	A	09/05/00	NONE	